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FORESTRY AS A FARM ENTERPRISE IN WASHINGTON PARISH, LOUISIANA

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The Occasional Papers of the Southern Forest Experiment Station present information on current Southern forestry problems under investigation at the Station. In some cases these contributions were first presented as addresses to a limited group of people, and as "occasional papers" they can reach a much wider audience. In other cases, they are summaries of investigations prepared especially to give a report of the progress made in a particular field of research. In any case, the statements herein contained should be considered subject to correction or modification as further data are obtained.

FORESTRY AS A FARM ENTERPRISE IN WASHINGTON PARISH, LOUISIANA [1/]

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Practically every farm in Washington Parish, La., has its woodland. Annual crops of fence posts and fuel wood, as well as occasional crops of sawlogs and pulpwood, are harvested from this woodland, just as cotton is harvested from the cotton patch. The woodland is a part of the farm acreage; as such it constitutes a part of the farm investment and yields a part of the farm income. It is used for grazing livestock. Mules, wagons, axes, and similar capital used in other farm enterprises are used part time in harvesting woodland crops, and some of the family labor is so expended.

Farm forestry is, therefore, one of several enterprises on the usual farm. At present it is a minor one in spite of the fact that woodland generally makes up about 40 percent of the usual farm area of 40 to 60 acres. Cotton growing, for which about 25 percent of the total area is used, is the only commercial enterprise of importance. Washington, one of the so-called Florida Parishes (fig. 1), is characterized by small owner-operated farms, tilled with simple tools. Cash income, chiefly from cotton, is small, but farm and family requirements for food and feeds are largely supplied from other farm enterprises. The farm forest now furnishes wood and posts for household and farm needs, but little cash income. BBefore the farmer will voluntarily develop it into a major farm enterprise he must be convinced that good woodland management has a reasonable chance of yielding a net income above any additional expense.

1/ The study reported in this Occasional Paper was made as a part of the Bureau of Agricultural Economics - State Agricultural Experiment Station farm management project under a cooperative agreement signed by the following agencies: Bureau of Agricultural Economics, Soil Conservation Service, Forest Service, and Louisiana Agricultural Experiment Station. Pursuant to the terms of the agreement the Soil Conservation Service made timber inventories and growth studies, besides obtaining records of timber used and sold on sample farms; the Forest Service supervised the field work, analyzed the field data, and prepared the report on the farm forestry enterprise. This report will be published by Louisiana State University as a part of a larger report covering all farm enterprises. In order to make the farm forestry report more widely available it is being published, with the consent of all cooperating agencies, as an Occasional Paper.

it might entail. He will also be interested in knowing the probable demands upon his time, both as to the total required and the seasons when work can be done. The purpose of the study reported herein was to appraise the present and potential contribution of farm woodlands to the farm economy. If management of farm woodlands can be shown to produce cash returns, it is clearly a possible adjustment of the farm organization and practices.

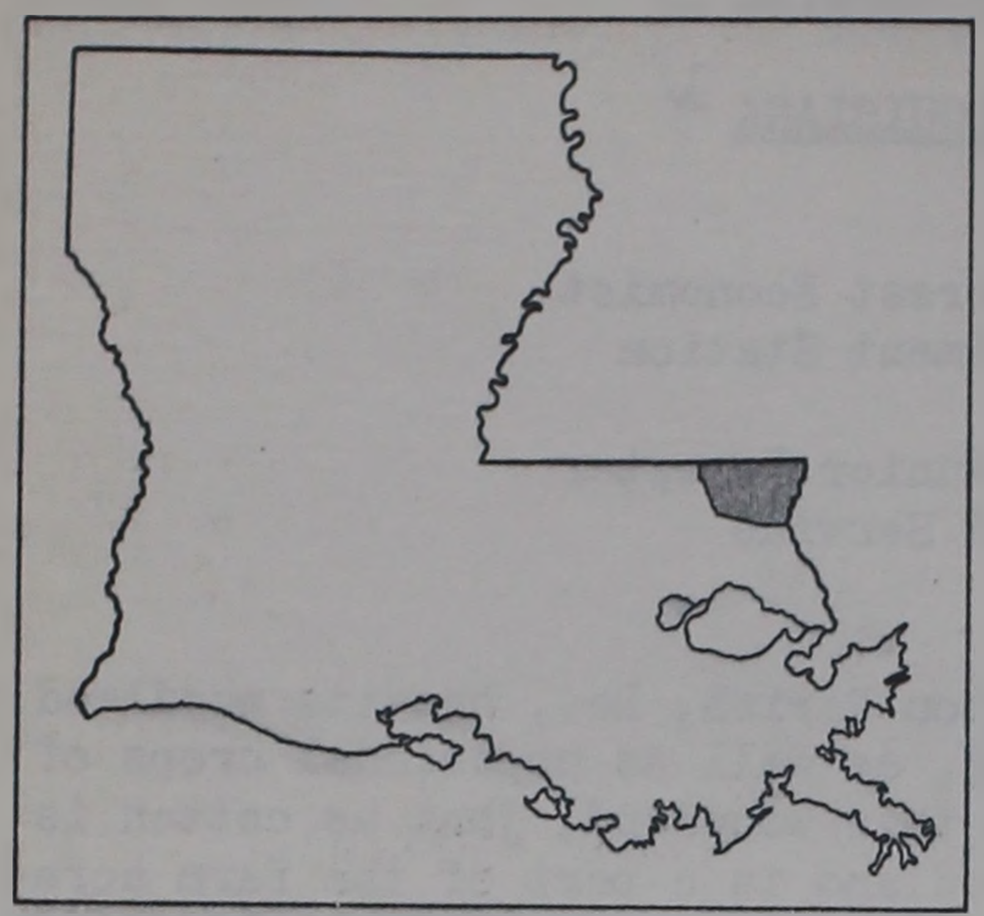


FIGURE 1.—LOCATION OF WASHINGTON PARISH IN LOUISIANA.

Improvement and management of farm woodlands fits in well with the usual organization of the farm. The farmer already has an area of woodland which is capable of contributing more substantially to the farm economy than at present. In most cases the woodland contains enough timber to produce the annual household and farm requirements for fuel wood and fence posts, along with a fair stocking of young growth and a sufficient number of seed trees to restock the area naturally, so that costs of planting artificially are not involved. With a long growing season, favorable distribution of rainfall, and an excellent site, trees probably grow as rapidly in Washington Parish as in almost any section of the South. The farmer does not need to fertilize or cultivate the individual trees; instead, while he works his cotton and handles the other crops on his farm, trees grow naturally. In nearly all woodlands, however, the growing stock needs to be built up in quantity and quality. These aims can be accomplished by frequent light improvement cuttings made during the winter months when the farmer has much free time. In tending the woodland crop, the ax is accordingly the principal cultural tool. No complicated plan of cutting and management is necessary, but a few simple rules must be followed in improving farm woodlands.

Farm Woodlands in Washington Parish

Washington Parish is generally considered to be in the longleaf pine region, yet on only a very small number of the farm woodlands studied was longleaf pine the predominant species. The predominating type was loblolly pine and hardwoods, with scattered individuals of shortleaf and longleaf pine. This is largely accounted for by the fact that the farms are small and the woodlands are usually limited to the branch bottoms and slopes that are too wet or too steep for cultivation, but are natural sites for loblolly pine and hardwoods. Furthermore, longleaf pine does not naturally restock as prolifically as loblolly pine; therefore loblolly is quite generally replacing the longleaf, even on areas which originally bore practically pure stands of virgin longleaf timber. The hardwoods associated with the pine are red oak and post oak on the drier uplands and redgum (sweetgum) and blackgum (black tupelo), water and white oak, yellowpoplar, and some other less valuable species on the moister sites. In a few cases, the pine-hardwoods give way to bottomland hardwoods, composed mostly of "gum," magnolia, water oak, and more

rarely, cypress. Because of the predominance of loblolly pine-hardwoods, and also because of the limited nature of this study, the results given here are confined to this type.

The farm woodlands in Washington Parish are generally of small acreage. The AAA records show that 39 percent of the farms of the parish have less than 20 acres classed as "other lands," including woodlands, open pasture, and waste land. An additional 22 percent of the farms in the parish have from 20 to 39 acres in "other land." The average one-mule cotton farm has 22 acres of cropland and 20 acres of "other land," and the average two-mule cotton farm has 33 acres of cropland and 32 acres of "other land." Inventories of farm woodlands made during this study showed that on the one-mule farm 15 of the 20 acres of "other land" was in woods, and on the two-mule farm 25 of the 32 acres of "other land" was in woods.

As a rule, farm woodlands are overcut, overgrazed, and burned over frequently. In many cases, the heavy annual drain for fuel wood and the occasional sale of merchantable material during hard years have removed the best pines and hardwoods of merchantable size—the crop trees--and left only poor-quality trees of the larger sizes--the weeds—together with trees of small sizes. On a small farm, grazing is often heavy, and fire is sometimes used in an effort to eliminate underbrush and establish more and better grass. In spite of mistreatment, however, the usual farm woodland, although seriously deficient in trees of sawlog size, has succeeded in restocking itself with young growth, which, if properly managed, will supply current farm needs and yield a gradually increasing volume of salable material. A small percentage of farm woodlands have been well managed and now contain well-stocked stands that can yield a considerable immediate income. Table 1 gives the average stand for the usual farm woodland, including all except the best 10 percent, and table 2, the average stand for the best 10 percent of all stands. These tables show by diameter classes the number of good trees (potential saw-timber trees) and the number of poor trees (which should be utilized for pulpwood, fuel wood, or other low-quality products). Attention is called to the significant predominance of unprofitable hardwoods in the usual stand that has resulted from years of poor cutting practices. The stand representing the best 10 percent is a good example of what the usual woodland can be built up to if good forestry is practiced for several years.

Forest Products Used on Farms

The fuel commonly used in the household for cooking and heating is wood cut on the farm, obtained from other land without cost, or in a few cases purchased. The fact that farmers must have this fuel wood is the main reason that they keep some of their land in woods instead of clearing it for cropland. A canvass of the farms showed that about 9.6 cords of wood is consumed annually on the usual one-mule cotton farm and about 11 cords annually on the usual two-mule cotton farm. Of the fuel wood used on the one-mule cotton farms, about 85 percent is cut from their own woodlands, averaging 15 acres each. The 25-acre woodlands on the two-mule cotton farms provide practically all the fuel wood needed on such farms. If all fuel wood were purchased, it would take about 25 percent of the cash income from cropland on the one-mule farm and almost 20 percent on the two-mule farm, assuming an average price of $4.00 per cord.

Table 1.—Average number of trees per acre in the usual farm woodlands, loblolly pine-hardwood type

Diameter breast high (inches)	Good trees					Poor trees					Total		
	Pine	Oak	"Gum"	Other hdwds.	Total	Pine	Oak	"Gum"	Other hdwds.	Total	Pine	Hdwd.	Total
4	47.30	3.28	2.02	2.99	55.59	2.41	6.77	2.37	4.67	16.22	49.71	22.10	71.81
6	21.95	2.94	2.19	2.18	29.26	.32	9.99	6.33	8.08	24.72	22.27	31.71	53.98
8	8.79	1.48	1.56	1.24	13.07	.04	3.93	3.59	4.15	11.71	8.83	15.95	24.78
10	3.81	.79	1.31	.62	6.53	.02	1.87	1.35	1.77	5.01	3.83	7.71	11.54
12	2.57	.45	.93	.52	4.47	.02	1.17	1.07	1.15	3.41	2.59	5.29	7.88
14	1.24	.55	.73	.35	2.87	.01	.60	.67	.67	1.95	1.25	3.57	4.82
16	.93	.37	.49	.16	1.95	..	.64	.42	.63	1.69	.93	2.71	3.64
18	.39	.13	.13	.09	.74	.01	.17	.06	.09	.33	.40	.67	1.07
20	.16	.03	.06	.05	.30	..	.02	.02	.03	.07	.16	.21	.37
22	.03	.03	.02	.06	.14	..	.01	.07	.03	.11	.03	.22	.25
24	.01	.04	.02	.03	.10	..	.04	.02	..	.06	.01	.15	.16
Total	87.18	10.09	9.46	8.29	115.02	2.83	25.21	15.97	21.27	65.28	90.01	90.29	180.30

Table 2.--Average number of trees per acre in the best 10 percent of farm woodlands, loblolly pine-hardwood type

Diameter breast high (inches)	Good trees					Poor trees					Total		
	Pine	Oak	"Gum"	Other hdwds.	Total	Pine	Oak	"Gum"	Other hdwds.	Total	Pine	Hdwd.	Total
4	56.10	17.34	2.60	3.34	79.38	1.03	6.34	2.86	1.93	12.16	57.13	34.41	91.54
6	39.79	7.81	.86	.83	49.29	.64	5.81	3.17	1.79	11.41	40.43	20.27	60.70
8	24.29	2.50	1.07	.45	28.31	.24	1.36	2.26	.74	4.60	24.53	8.38	32.91
10	10.41	.16	.28	.59	11.44	.19	.64	.79	.45	2.07	10.60	2.91	13.51
12	6.86	.59	.48	.31	8.24	.19	.84	.57	.16	1.76	7.05	2.95	10.00
14	6.47	.48	.34	..	7.29	.16	.34	.50	.16	1.16	6.63	1.82	8.45
16	2.24	.38	.09	.09	2.80	..	.76	.66	.16	1.58	2.24	2.14	4.38
18	3.48	.64	.09	..	4.21	..	..	..	.16	.16	3.48	.89	4.37
20	1.07	.16	.09	..	1.32	..	..	.09	..	.09	1.07	.34	1.41
22	.36	..	..	..	.36	..	..	..	..	..	.36	..	.36
24	.24	..	..	..	.24	..	...	..	..	..	.24	..	.24
Total	151.31	30.06	5.90	5.61	192.88	2.45	16.09	10.90	5.55	34.99	153.76	74.11	227.87

In most cases, there is ample fuel wood on the farm woodland if all available noncommercial trees are utilized properly. This necessitates using blackjack oak, hickory, and other unmerchantable species, together with limby "wolf" trees and scrubby individuals of oaks, "gums," and other merchantable species. Lightwood (resinous pine), which formerly could be procured without cost on lands belonging to large companies, is now scarce. Pine fuel wood on the farm woodlands is also limited, since farmers have depleted their stands by cutting pine trees for stove wood because they split easily, and leaving uncut the hardwoods, which are more difficult to split. If farmers are willing to cut their fuel wood early enough to allow proper seasoning before use, there is no reason why the bulk of the fuel wood cannot come as a byproduct from hardwoods, especially those unsuitable for saw timber.

Another drain upon the farm woodland is the cutting of fence posts. The study showed that about 60 fence posts are used each year on a small farm. Approximately the same number of fence posts are used on farms of both one-mule and two-mule classes. Only about two-thirds of the fence posts used on the one-mule farm were cut from the farm woodland, while practically all used on the two-mule farm were home products. In general, farmers are not keeping their fences up well and the post situation is becoming more critical each year. Pine lightwood posts can no longer be obtained without cost, and good heartwood posts are scarce. The farmer is therefore often forced to use sap-pine or sap-hardwood for posts; these last only 1 or 2 years in the ground and then must be replaced. This replacement is a heavy drain on the farmer's time as well as a heavy drain on the woodland. Black locust, oak, mulberry, cherry, and sassafras heartwood posts are being purchased to some extent, but at an average price of about 8 cents the farmer cannot afford many of them. Some farmers are cutting posts as thinnings from thick stands of young pine saplings. These are peeled and taken to the treating plant in Bogalusa, where they are given a pressure creosote treatment, costing about 8 to 12 cents per post. Such posts usually do not need to be replaced during the life of the farmer.

Good saw timber is relatively scarce on the usual farm. The canvass of 66 farmers disclosed that during a 10-year period (1930-39) only 22 of them cut saw timber from their woodlands, had it sawed into lumber, and used it on the farm. A total of 81,100 board feet was cut, an average for the 66 farms visited of 1,229 board feet each in the 10-year period, or 123 board feet annually. Lumber was purchased for use on the 22 farms in addition to that sawed from home-grown logs. Of those farmers who did not cut saw timber from their woodlands, 14 reported using lumber. A total volume of 89,860 board feet of lumber was purchased and used, an average for the 66 farms of 1,361 board feet each during a 10-year period, or 136 board feet per farm annually. The volume of lumber used on the average farm during the 10-year period was, therefore, only 2,590 board feet, or 259 feet annually. Data on existing farm buildings indicates that they are inadequate and are not being maintained in good repair. Evidently, the farmers with low incomes cannot afford to spend much money for lumber. The average price paid for the lumber purchased during the last 10 years was $26.22 per thousand feet at the lumber yard.

Market Outlets and Prices

Out of the total of 66 farms visited, 31 farms reported sales of forest products in the 10-year period 1930-39. Table 3 lists the different items and shows that forest products to a total value of $2,735.09, or $41.44 per farm, were sold during the 10 years. The average annual sale value of forest products per farm was only $4.14. Very probably an advisory technical agency could have suggested sales methods that would have obtained better prices.

Table 3.--Total forest products sold in 10 years[1] from 66 farms in Washington Parish, La.[2]

Product	Total	Quantity and unit	Price per unit
	Dollars		Dollars
Ties (cut and delivered)	200.00	500 ties	0.40
Pulpwood (stumpage)	336.50	630 units[3]	.53
Pulpwood (cut, or cut and delivered)	430.55	241 units[3]	1.79
Saw timber (stumpage)			
a. Recorded	573.29	117.4 M bd.ft.[4]	4.88
b. Estimated	500.00	(Sold by lot)	(Unknown)
Sawlogs (delivered)	415.00	28.0 M bd.ft.[4]	14.82
Poles (delivered)	279.75	98 poles	2.85
Total	2,735.09		
Average, 31 farms reporting sales	88.23		
Average, 66 farms	41.44		

1/ 1930-39.
2/ Of 66 farms visited 31 reported sales.
3/ (4' x 5' x 8').
4/ Doyle rule.

In Washington Parish there are market outlets for practically all forest products. Early in 1940, pine saw-timber stumpage brought from $4 to $10 per thousand; white oak, yellowpoplar, and magnolia averaged about $6 per thousand; and red oak, "gum," and other less valuable species averaged about $4 per thousand. Logs delivered at the mill brought from $4 to $6 more than the stumpage price. For pulpwood, the farmer usually received from the contractor (who furnishes pulpwood to the pulp mill) 50 cents per unit (4' x 5' x 8') of stumpage or $1.50 per unit cut and stacked by a woods road. The price was $3.75 for a unit delivered at the pulp mill, or somewhat less delivered at the railroad. Poles and piling brought more than any other forest product, the price varying greatly according to size and length. Pine and hardwood cross ties sold for approximately 30 to 60 cents per tie delivered at the railroad. Peeled pine posts and heart hardwood posts brought about 5 to 10 cents each when delivered at the treating plant or at the shipping point. The market for fuel wood is rather limited, but a cord of pine or hardwood stove wood delivered in town brought about $5 to $6 per cord, and fireplace wood about $4 a cord. With the present market outlets, the farmer can find a ready sale for any high-quality material that he may produce. Several sawmills in the parish purchase stumpage and sawlogs. There is also a steady market for pulpwood. The poor-quality hardwoods may offer a problem, but ties can often be cut from them; moreover, it will be shown in a later section that after providing fence posts and fuel wood for home use on the usual farm, there will be no surplus of hardwoods.

Improvement and Management of Farm Woodland

A cotton field choked with weeds will not produce a large yield of cotton. In order to obtain a high yield, the farmer removes these weeds by cultivating; likewise, if the stand of cotton is too heavy, he chops out some of the plants, selecting the individuals that are vigorous and spaced well for good growth; and if part of the field is flooded so that the plants are killed, he reseeds it. He spends his time and money in these different operations because he knows they will result in a larger yield of cotton and a greater net income.

The average farmer in Washington Parish has not shown as much progressiveness in adopting practices to increase yield and net income from his farm woodland as he has shown in growing cotton. Most of his income has come from cotton and only a trifle from woodland products, and in all fairness he should not be criticized severely because of this lack of progress and interest in woodland management. Originally, most of these farms were cleared from cut-over timberlands, and the owners had to get rid of trees to make way for crops. Usually all land was cleared except a small woodland that was unfit for cultivation or was regarded as an essential source of fuel wood, fence posts, and other products used on the farm. Having only a small cash income from his cropland during good years, it was natural that during a year of poor crops or poor prices the farmer should liquidate any merchantable timber available on his woodlands in order to obtain money for the bare necessities of life. For the farmer with a small acreage of cut-over woodland, there was little incentive to protect and manage it for products higher in value than posts and fuel wood, and the growing of commercial crops of timber for harvesting in the uncertain future had little appeal to him. This is not surprising, since

the average farmer until very recently had hardly heard of woodland management, and had no concrete conception of the financial possibilities of such management.

It should not be expected, therefore, that this traditional attitude toward farm woodlands will suddenly give way to an enthusiastic desire to practice farm forestry. On the contrary, before farmers generally adopt good forest practices, considerable time must elapse and much untiring activity in educational work will be required of those agencies dealing with farm forestry. First of all, before any real progress can be made, the following bad practices must be stopped:

1. Indiscriminate, wasteful use of saw-timber trees or potential saw-timber trees for fuel wood and fence posts.
2. Destruction of pine and hardwood seedlings—the future crop of saw-timber trees—by burning over the woodland to improve grazing.
3. Overgrazing the woodland, which keeps down the natural reproduction of pine and hardwoods.
4. Serious overcutting of the woodland resulting from the practice of periodically selling all merchantable logs and pulpwood for a lump sum.

Before setting up probable yields and income that can be expected from managing the usual farm woodlands in Washington Parish, it is pertinent to ask: What practices are necessary to improve the farm woodland and to place it under good management? Good management of the farm woodland is not very different from good farming. A complicated management plan is not needed; on the contrary, only the following relatively simple practices are required:

1. Control forest fires. Without adequate fire protection, management in loblolly pine and hardwoods is useless, since uncontrolled fires prevent natural regeneration and destroy or at least seriously damage premerchantable or even saw-timber growing stock. The farmer can generally prevent fires in these woodlands without special effort, but it may be necessary in some cases to plow furrows and burn a strip between his woodland and adjoining woodlands where fires are not controlled.

2. Make improvement cuttings. The removal of defective and poor-quality trees will improve both the density and the value of the growing stock, affording more light and space for the better trees and greatly accelerating their growth. Fuel wood for the household and perhaps some current income from sale of ties or pulpwood can be obtained by utilizing blackjack oak, hickory, and other species of little commercial value, defective and scrubby individuals (not containing sawlogs) of pine, oak, and other commercial species, and tops of pine and hardwood saw-timber trees. Not only will this improve the condition of the stand, but it will save the pine and better-formed hardwoods until they have reached good saw-timber size.

3. Build up the saw-timber growing stock by limiting the cut during each 5-year period to 20 percent of the saw-timber volume. Growth studies in Washington Parish indicate that such cutting will result in automatic sustained-yield management. During the first period, when open stands are growing rapidly, cuts of 20 percent of the saw-timber volume (measured in board feet) will remove considerably less than the growth and understocked

stands will be built up, but during later periods after stands become more fully stocked and growth has decelerated, 20 percent of the saw-timber growing stock will approximately equal the growth. Light cuts at 5-year intervals or at shorter periods if practicable provide a means of salvaging trees that are infested with insects or dying from other natural causes. They also provide for liquidating overmature trees and for thinning overcrowded stands. Although improvement cuttings throughout the woodland for fuel wood and other home needs may be made each year, and although annual incomes from sale of woodland products are very desirable, annual cuts of saw timber are not feasible in the depleted stands on the small woodland areas. Therefore cuts once each 5 years are recommended in order that the cut per acre may be heavy enough to justify a commercial operation. The cuts need not be made exactly at 5-year intervals, however; market conditions and the financial needs of the owner should be given consideration in deciding when to cut. Cuts at intervals of less than 5 years should be made where and when they become economically practicable.

4. Select and mark merchantable trees to be cut, so as to build up the quality of the growing stock. Proper selection is the heart and foundation of good management practices. Real improvement of cutting methods demands that every tree be marked before cutting is permitted. The object in marking the 5-year cut should be to leave the stands in the best condition possible for future growth by reserving immature trees, and at the same time to make the current operation yield the largest possible profit. By cutting trees in all diameter classes and saving many of the larger high-quality trees, the distribution of timber over the several diameter classes will be shifted from the less valuable smaller toward the more valuable larger diameters. Merchantable trees to be marked for cutting may be classified, beginning with those to be removed first, as follows:

a. Poor risks, trees unlikely to remain alive until the next cutting.

b. Trees seriously decayed or infested with beetles.

c. Overmature trees that have passed optimum development and are now deteriorating.

d. Overtopping "wolf" trees that are seriously retarding the growth of better trees.

e. Poorly formed and unthrifty trees seriously crowding the better trees in overstocked stands.

f. Poor-quality trees which, because of crook, short stem, or limbiness, will produce only growth of low quality.

g. Inferior species that have a very limited market as saw timber, such as hickory, red maple, and other hardwoods.

h. Trees approaching financial maturity, which must be cut to satisfy the financial needs of the farm owner.

5. Cut sawlogs, pulpwood, and ties, and sell them, instead of stumpage, to the highest bidder. By using his family labor for cutting each tree and portion of each tree into those products that will yield the largest net return and then selling to the highest bidder, the farmer can increase his cash income substantially above what he would receive by selling stumpage for a lump sum to the first person making an offer.

6. Limit grazing to work animals and a cow or two. Natural reproduction of both pines and hardwoods is prevented by heavy grazing.

Assuming that good management practices are adopted, many years will be required, even so, to remold the unmanaged forests of Washington Parish to the pattern desired, since the farm woodlands are generally depleted of high-quality saw-timber trees, but overstocked with undesirable hardwoods. There is a good understory of young trees, however, and with good growth, good markets, and proper attention given to the requirements of commercial operation as well as to stand improvement, good management should yield some net income from the beginning, and become increasingly profitable as yields increase in quantity and quality.

Available Technical Assistance

Even though the practices necessary for good forest management are relatively simple, will most farmers adopt them? Furthermore, is sufficient technical assistance available to them for carrying out a program of woodland management? Evidently a carefully planned educational program, including concrete demonstrations of profitable management of farm woodlands in the parish, is needed first. Following this, specific help in marking timber on the ground will be required. A limited amount of technical assistance for such a program is now available. Washington Parish is included in the Bogue Chitto-Pearl River Soil Conservation District. This District, which functions under a governing board of farmers, has authority to furnish technical forestry assistance to farmers. The Soil Conservation Service in turn gives some assistance to the District. Other public agencies authorized to aid the farmers in forest management are the State Extension Service and State Department of Conservation. The Forestry Division, Gaylord Container Corporation, at Bogalusa, also offers help to farmers in forest management.

Farmers in Washington Parish are fortunate in being able to call upon these agencies for assistance, but it must be understood that the public agencies are often limited in their activities because of insufficient personnel and funds; furthermore, they are overburdened with other duties and, in some cases, obligated to serve many other parishes (or counties) or even the whole state. In reality the available technical assistance is not adequate to meet and solve the important farm forestry problems in Washington Parish.

In comparison with what has been done in some other countries, only a beginning has been made in the United States in the application of forestry principles to the management of farm woodlands. In Sweden, for example, this problem has been handled very successfully by forest boards in each province which employ foresters and make their services available to farmers for marking timber at specified fees. These boards also provide for cooperatives to handle sales of forest products cut from farmer's woodlands. With increased funds the present agencies could undoubtedly expedite the adoption of good forestry by farmers.

Yields From Usual Farm Woodland

The yields that can be expected from good management of the usual farm woodlands on the one-mule and the two-mule cotton farms, consisting of 15 and 25 acres, respectively, have been estimated by 5-year periods

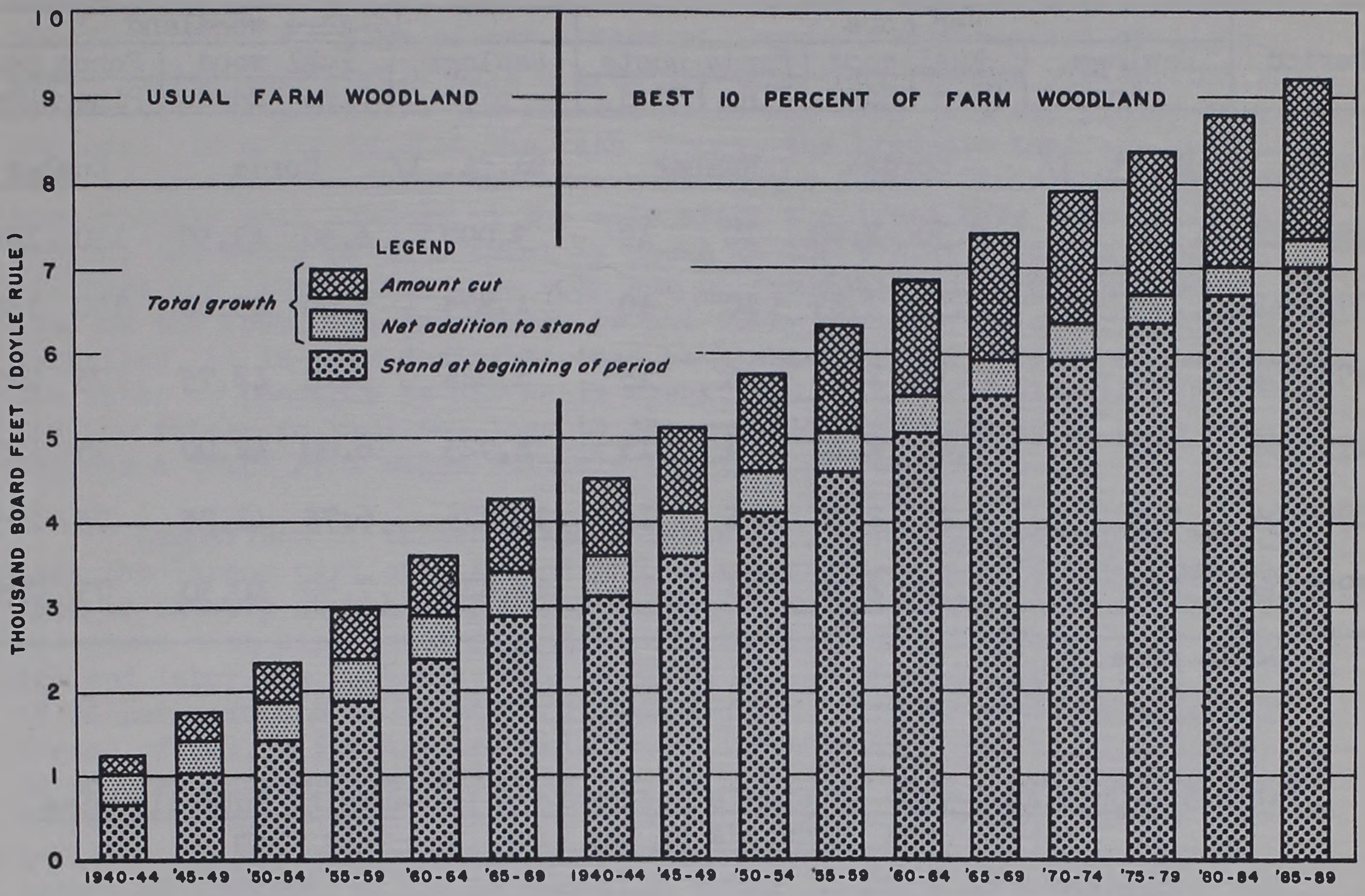
from the present to the year 1969. The yields for the first period, 1940 to 1944, are based on present stands, present growth rates, present requirements of fuel wood and other products for home use, and the assumption that the saw-timber cut will remove 20 percent of the saw-timber volume. Future yields are predicated on deceleration of growth as stands become more heavily stocked, but take into account the same home needs and the 20-percent cut from saw-timber growing stock during each 5-year period.

Management as applied to these stands includes those simple practices that have been set up for the direction of the farmer. The most radical change from present practice is the saving of the potential saw-timber trees for commercial lumber production, and the cutting of the bulk of the fuel wood from hardwood trees that contain no merchantable sawlogs. While some labor will be required of the farmer in fighting forest fires that threaten the woodland, or perhaps in plowing fire lines, and more effort will be needed to cut fuel wood from hard-splitting hardwood instead of easy-splitting pine, management will not entail cash outlays. Moreover, it requires only such thinning or cutting as will yield salable material or forest products that can be used on the farm.

Pine, which grows more rapidly and yields greater returns than hardwoods, should be favored in management to produce saw timber in Washington Parish. Accordingly, the heavy requirements for fuel wood must be supplied chiefly from hardwoods. Figure 2 shows, for the usual farm woodland and also for the best 10 percent of farm woodlands, the pine saw-timber yields that can be expected from good forest management. The various sections of the bars represent for each 5-year period the stand at the beginning of the period, the total growth during the period, and the yield or that part of the growth that is cut in the same period. According to the prediction, after 30 years of management the usual stand of 645 board feet per acre will be built up to 3,425 board feet per acre besides yielding six periodic cuts varying from 255 board feet for the first to 855 board feet for the sixth and totaling 3,165 board feet per acre. During the 30-year period the annual growth will increase from 125 board feet (1940-44) to 275 board feet (1965-69). After 50 years of management and selective cutting at 5-year intervals, the stand on the best 10 percent of farm woodlands, which has a present volume of 3,100 board feet per acre, should increase to 7,370 board feet besides yielding 10 cuts varying from 905 board feet for the first to 1,845 for the tenth and totaling 14,095 board feet per acre. The annual growth will increase from 285 board feet per acre (1940-44) to 433 board feet per acre (1985-89).

FIGURE 2

ESTIMATED PINE SAW-TIMBER YIELDS PER ACRE FROM MANAGED FARM WOODLANDS OF LOBLOLLY PINE-HARDWOOD TYPE IN WASHINGTON PARISH, LA., BY 5-YEAR PERIODS, 1940-89



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Tables 4 and 5 show, for the usual one-mule farm and for the two-mule farm, the cuts recommended in managing loblolly pine and hardwoods. On the one-mule farm with only 15 acres of woodland, it is necessary to appropriate all of the hardwoods and a part of the pine saw timber as well to make up the fuel-wood requirement of 9.6 cords annually, or 48 cords each 5 years. But in the 25-acre woodland on the two-mule farm some of the best hardwood trees and all pine saw-timber trees are saved for production of sawlogs, and the fuel-wood requirement of 11 cords annually, or 55 cords each 5 years, is cut from pine and hardwood top wood, defective and limby pine trees, and the poorer hardwood trees. In neither case is there any pine material in excess of fuel-wood needs that could be cut for pulpwood, or any excess volume of hardwoods that could be cut into ties. During the 30 years, the periodic cut of pine saw timber is increased from present cuts of 200 and 255 board feet per acre, respectively, on the one-mule and two-mule farms, to 855 board feet for the period 1965-69. The amount of available pine fuel wood is limited in most cases, and especially so on the one-mule farm.

Table 4.—Cuts at 5-year intervals recommended in managing loblolly pine and hardwoods on the usual one-mule farm

Period	Per acre					15-acre woodland				
	Sawlogs, pine	Fuel wood		Fence posts		Sawlogs, pine	Fuel wood		Fence posts	
		Pine	Hdwd.	Pine	Hdwd.		Pine	Hdwd.	Pine	Hdwd.
	Bd.ft. 1/	Cords		Number		Bd.ft. 1/	Cords		Number	
1940-44	200	0.30	2.90	10	10	3,000	4.50	43.50	150	150
1945-49	325	.33	2.87	10	10	4,875	5.00	43.00	150	150
1950-54	375	.35	2.85	5	15	5,625	5.25	42.75	75	225
1955-59	595	.40	2.80	5	15	8,925	6.00	42.00	75	225
1960-64	725	.45	2.75	5	15	10,875	6.75	41.25	75	225
1965-69	855	.50	2.70	5	15	12,825	7.50	40.50	75	225

1/ Doyle rule.

Table 5.—Cuts at 5-year intervals recommended in managing loblolly pine and hardwoods on the usual two-mule farm

Period	Per acre						25-acre woodland					
	Sawlogs		Fuel wood		Fence posts		Sawlogs		Fuel wood		Fence posts	
	Pine	Hdwd.	Pine	Hdwd.	Pine	Hdwd.	Pine	Hdwd.	Pine	Hdwd.	Pine	Hdwd.
	Bd.ft. 1/		Cords		Number		Bd.ft. 1/		Cords		Number	
1940-44	255	50	0.20	2.00	2	10	6,375	1,250	5.00	50.00	50	250
1945-49	360	55	.30	1.90	2	10	9,000	1,375	7.50	47.50	50	250
1950-54	375	65	.35	1.85	2	10	9,375	1,625	8.75	46.25	50	250
1955-59	595	65	.40	1.80	2	10	14,875	1,625	10.00	45.00	50	250
1960-64	725	70	.45	1.75	2	10	18,125	1,750	11.25	43.75	50	250
1965-69	855	75	.50	1.70	2	10	21,375	1,875	12.50	42.50	50	250

1/ Doyle rule.

Incomes From Usual Farm Woodland

In tables 6 through 9 values have been assigned to the cuts from farm woodlands. Incomes for all periods are based on market outlets and prices in effect early in 1940. Prices later in 1940 were considerably higher but may have been abnormal because of requirements of the defense program. Future yields of saw timber will undoubtedly consist of higher-grade timber that should have a greater value than present yields, but in order to be conservative the present value has been used for yields of all periods. In order to show the cash income, the products that are sold have been separated from those that are used on the farm. Since the farmer can more readily sell sawlogs at the site after the trees have been felled and bucked, the value of this labor is shown in the tables. Values, including stumpage and labor, have also been set up for fuel wood and fence posts used on the farm. As the farmer is not fully employed in other farm enterprises, it is very desirable that he himself should perform as much of the labor as possible in his woods operations. It would also be desirable for the farmer to haul the logs to the sawmill, but usually he does not possess a truck or a wagon suitable for this purpose.

Comparison of tables 6 and 7 makes it plain that even under management the larger part of the wood production on the one-mule farm must be used to satisfy household and farm needs. The estimated value of the wood and posts that will be used annually on the farm is $22.20, if only stumpage and labor are included, but comes to $43.20 when delivered sale prices of $4 per cord and $0.08 per post are applied. The present periodic cash income of $21.00 for the one-mule farm, or an average per year of $4.20, is not very impressive, but this can be increased more than fourfold after 30 years of management. The two-mule farm (tables 8 and 9) shows a present periodic cash income of $52.12, or $10.42 annually, and a future periodic income of $160.88, or $32.18 annually, after 30 years of management. The estimated value of the wood used annually on the farm is $25 considering stumpage and labor, or $48.80 computed at sale price. A study of these results must impress the reader with the penalty the farmers are paying for overcutting their farm woodlands.

Because these total returns are small, farm woodland management may not seem very important. A comparison of incomes from unmanaged, overcut, and mistreated farm woodlands with the incomes from managed farm woodlands, however, brings out striking differences. The operator of the one-mule farm at present sells practically no forest products for cash; on the contrary he must purchase annually, or obtain from some other source, 15 percent of his fuel-wood requirement of 9.6 cords (1.4 cords), and one-third of the required 60 fence posts (20 posts). If he bought these products delivered, they would cost about as follows:

1.4 cords fuel wood at $4.00	$5.60
20 posts (heart oak) at .08	1.60
Total	$7.20

The two-mule farm operator also sells only a limited quantity of forest products for cash, though the farm woodland makes him self-sufficient at present in respect to household and farm needs. Cruises on both one- and two-mule farms indicate that woodlands are going from bad to worse and that in the future more and more of the home needs must come from outside sources.

Table 6.—Cash income (in dollars) from periodic cuts of saw timber recommended in managing loblolly pine and hardwoods on the usual one-mule farm

Period	Per acre					15-acre woodland				
	Stumpage 1/		Labor 2/	Total	Average per year	Stumpage 1/		Labor 2/	Total	Average per year
	Pine	Hardwoods				Pine	Hardwoods			
1940-44	1.20	..	0.20	1.40	0.28	18.00	..	3.00	21.00	4.20
1945-49	1.95	..	.32	2.27	.45	29.25	..	4.88	34.13	6.83
1950-54	2.25	..	.38	2.63	.53	33.75	..	5.62	39.37	7.87
1955-59	3.57	..	.60	4.17	.83	53.55	..	8.92	62.47	12.49
1960-64	4.35	..	.72	5.07	1.01	65.25	..	10.88	76.13	15.23
1965-69	5.13	..	.86	5.99	1.20	76.95	..	12.82	89.77	17.95

1/ Stumpage: Pine at $6 per M feet, hardwoods at $5 per M feet (Doyle rule).
2/ $1 value per M feet added for felling and bucking into logs.

Table 7.—Value (in dollars) of periodic cuts of forest products used on the usual one-mule farm in addition to products sold

Period	Per acre								15-acre woodland							
	Fuel wood			Fence posts			Total	Average per year	Fuel wood			Fence posts			Total	Average per year
	Stumpage 1/	Labor 2/	Total	Stumpage 3/	Labor 4/	Total			Stumpage 1/	Labor 2/	Total	Stumpage 3/	Labor 4/	Total		
Each period, 1940-44 to 1965-69	1.60	4.80	6.40	0.40	0.60	1.00	7.40	1.48	24.00	72.00	96.00	6.00	9.00	15.00	111.00	22.20

1/ Stumpage at $0.50 per cord (4' x 4' x 8').
2/ $1.50 value per cord added for cutting and hauling fuel wood to house.
3/ Stumpage at $0.02 per post.
4/ $0.03 value per post added for cutting and hauling to field.

Table 8.—Cash income (in dollars) from periodic cuts of saw timber recommended in managing loblolly pine and hardwoods on the usual two-mule farm

Period	Per acre					25-acre woodland				
	Stumpage 1/		Labor 2/	Total	Average per year	Stumpage 1/		Labor 2/	Total	Average per year
	Pine	Hardwoods				Pine	Hardwoods			
1940-44	1.53	0.25	0.30	2.08	0.42	38.25	6.25	7.62	52.12	10.42
1945-49	2.16	.28	.42	2.86	.57	54.00	6.88	10.38	71.26	14.25
1950-54	2.25	.32	.44	3.01	.60	56.25	8.12	11.00	75.37	15.07
1955-59	3.57	.32	.66	4.55	.91	89.25	8.12	16.50	113.87	22.77
1960-64	4.35	.35	.80	5.50	1.10	108.75	8.75	19.88	137.38	27.48
1965-69	5.13	.38	.93	6.44	1.29	128.25	9.38	23.25	160.88	32.18

1/ Stumpage: pine at $6 per M feet, hardwoods at $5 per M feet (Doyle rule).
2/ $1 value per M feet added for felling and bucking into logs.

Table 9.—Value (in dollars) of periodic cuts of forest products used on the usual two-mule farm in addition to products sold

Period	Per acre								25-acre woodland							
	Fuel wood			Fence posts			Total	Average per year	Fuel wood			Fence posts			Total	Average per year
	Stumpage 1/	Labor 2/	Total	Stumpage 3/	Labor 4/	Total			Stumpage 1/	Labor 2/	Total	Stumpage 3/	Labor 4/	Total		
Each period, 1940-44 to 1965-69	1.10	3.30	4.40	0.24	0.36	0.60	5.00	1.00	27.50	82.50	110.00	6.00	9.00	15.00	125.00	25.00

1/ Stumpage at $0.50 per cord (4' x 4' x 8').
2/ $1.50 value per cord added for cutting and hauling fuel wood to house.
3/ Stumpage at $0.02 per post.
4/ $0.03 value per post added for cutting and hauling to field.

In contrast to this situation, the one-mule farmer, by properly managing his 15 acres of woodland, can produce all of his home needs and thus save the cash outlay of $7.20. In addition, he can realize a cash income of $21 in the first 5 years from sale of sawlogs, and increasing amounts in later periods as stands are built up to a better-stocked condition. The two-mule farmer with 25 acres of woodland can obtain, in addition to home needs, a cash income of $52.12 in the first 5 years and increasing periodic cash incomes thereafter. Although the total value of products sold plus products used on the farm is not large, it is of real weight to the farmer who has no woodland and who must buy fuel wood and fence posts out of his small net cash income from crops, averaging about $150 on the one-mule farm and $250 on the two-mule farm. Furthermore, when it is considered that only a few days of labor are actually spent in growing and harvesting the forest products, the returns take on added significance, and it may properly be asked why the farmer should not increase his woodland acreage.

Yields and Income From Better-stocked Stands

In order to show the advantages of better-stocked stands, the probable yields from management of loblolly pine and hardwoods on 25 acres of the best 10 percent of farm woodlands were estimated for ten consecutive 5-year periods in the future. From this better stand of pine, it would be possible during each 5-year period to cut and sell for cash pulpwood as well as sawlogs. Pulpwood is cut from tops of saw-timber trees and also from defective and limby trees removed to improve the stand, and is sold to the contractors who furnish pulp mills with pulpwood. The volume of hardwoods in such a stand, however, is considerably less than that in the usual farm woodland, and it would not be feasible to save any of the hardwood trees for sawlogs, since the fuel-wood requirements are greater than total hardwood growth. The recommended cuts of various products are given in table 10 on a per-acre basis, together with volumes for the 25-acre woodland. Values have also been computed for these products, as was done in the case of the usual farm woodland, and the results are given in tables 11 and 12. Table 11 shows that after 50 years of management the present periodic net cash income of $164.37, averaging $32.87 annually, can be increased to a periodic income of $344.24, averaging $68.85 annually. The annual net cash income from other farm enterprises on the two-mule farms approximates $250; therefore the farm forestry income during the first 5-year period adds about 13 percent to it and during the tenth 5-year period adds about 28 percent. Perhaps it should be repeated that in order to keep the estimates conservative, and in order to provide for unexpected reverses, the value per thousand feet of saw timber is held at current figures, although the timber and other forest products marketed after some years of management are certain to be of considerably higher quality and larger size than the average timber now being cut and sold in the parish.

Adjustment in Size of Woodland on Two-mule Cotton Farm and Probable Income

The low incomes to be expected from 15- or 25-acre understocked farm woodlands, or even the probable incomes from better-stocked farm woodlands, represent only a modest advance toward improving the general farm economy. The possibility of increasing the size of the woodland and thus substan-

Table 10.—Cuts at 5-year intervals recommended in managing loblolly pine and hardwoods on best 10 percent of farm woodlands

Period	Per acre						25-acre woodland					
	Saw-logs, pine	Pulp-wood, pine	Fuel wood		Fence posts		Saw-logs, pine	Pulp-wood, pine	Fuel wood		Fence posts	
			Pine	Hard-woods	Pine	Hard-woods			Pine	Hard-woods	Pine	Hard-woods
	Board feet[1]	Units[2]	—Cords—		Number		Board feet[1]	Units[2]	Cords		Number	
1940-44	905	0.16	0.50	1.70	2	10	22,625	4.00	12.50	42.50	50	250
1945-49	1,030	.22	.50	1.70	2	10	25,750	5.50	12.50	42.50	50	250
1950-54	1,155	.27	.50	1.70	2	10	28,875	6.75	12.50	42.50	50	250
1955-59	1,270	.32	.50	1.70	2	10	31,750	8.00	12.50	42.50	50	250
1960-64	1,380	.37	.50	1.70	2	10	34,500	9.25	12.50	42.50	50	250
1965-69	1,485	.42	.50	1.70	2	10	37,125	10.50	12.50	42.50	50	250
1970-74	1,585	.46	.50	1.70	2	10	39,625	11.50	12.50	42.50	50	250
1975-79	1,675	.50	.50	1.70	2	10	41,875	12.50	12.50	42.50	50	250
1980-84	1,765	.54	.50	1.70	2	10	44,125	13.50	12.50	42.50	50	250
1985-89	1,845	.57	.50	1.70	2	10	46,125	14.25	12.50	42.50	50	250

1/ Doyle rule.
2/ Unit = a rick of wood (4' x 5' x 8').

Table 11.—Cash income (in dollars) from periodic cuts recommended in managing loblolly pine and hardwoods on best 10 percent of farm woodlands

Period	Per acre								25-acre woodland							
	Sawlogs			Pulpwood			Total both products	Average per year	Sawlogs			Pulpwood			Total both products	Average per year
	Pine 1/ stumpage	Labor 2/	Total	Pine 3/ stumpage	Labor 4/	Total			Pine 1/ stumpage	Labor 2/	Total	Pine 3/ stumpage	Labor 4/	Total		
1940-44	5.43	0.90	6.33	0.08	0.16	0.24	6.57	1.31	135.75	22.62	158.37	2.00	4.00	6.00	164.37	32.87
1945-49	6.18	1.03	7.21	.11	.22	.33	7.54	1.51	154.50	25.75	180.25	2.75	5.50	8.25	188.50	37.70
1950-54	6.93	1.16	8.09	.14	.27	.41	8.50	1.70	173.25	28.88	202.13	3.38	6.75	10.13	212.26	42.45
1955-59	7.62	1.27	8.89	.16	.32	.48	9.37	1.87	190.50	31.75	222.25	4.00	8.00	12.00	234.25	46.85
1960-64	8.28	1.38	9.66	.18	.37	.55	10.21	2.04	207.00	34.50	241.50	4.62	9.25	13.87	255.37	51.07
1965-69	8.91	1.48	10.39	.21	.42	.63	11.02	2.20	222.75	37.12	259.87	5.25	10.50	15.75	275.62	55.12
1970-74	9.51	1.58	11.09	.23	.46	.69	11.78	2.36	237.75	39.62	277.37	5.75	11.50	17.25	294.62	58.92
1975-79	10.05	1.68	11.73	.25	.50	.75	12.48	2.50	251.25	41.88	293.13	6.25	12.50	18.75	311.88	62.38
1980-84	10.59	1.76	12.35	.27	.54	.81	13.16	2.63	264.75	44.12	308.87	6.75	13.50	20.25	329.12	65.82
1985-89	11.07	1.84	12.91	.28	.57	.85	13.76	2.75	276.75	46.12	322.87	7.12	14.25	21.37	344.24	68.85

1/ Sawlog stumpage: Pine at $6 per M feet, hardwoods at $5 per M feet (Doyle rule).
2/ $1 value per M feet added for felling and bucking into logs.
3/ Pulpwood stumpage at $0.50 per unit (4' x 5' x 8').
4/ $1 value per unit added for cutting and stacking pulpwood.

Table 12.—Value (in dollars) of periodic cut of forest products used on the best 10 percent of farm woodlands in addition to products sold

Period	Per acre								25-acre woodland							
	Fuel wood			Fence posts			Total both products	Average per year	Fuel wood			Fence posts			Total both products	Average per year
	Stumpage 1/	Labor 2/	Total	Stumpage 3/	Labor 4/	Total			Stumpage 1/	Labor 2/	Total	Stumpage 3/	Labor 4/	Total		
Each period, 1940-44 to 1985-89	1.10	3.30	4.40	0.24	0.36	0.60	5.00	1.00	27.50	82.50	110.00	6.00	9.00	15.00	125.00	25.00

1/ Stumpage at $0.50 per cord (4' x 4' x 8').
2/ $1.50 value per cord added for cutting and hauling fuel wood to house.
3/ Stumpage at $0.02 per post.
4/ $0.03 value per post added for cutting and hauling to field.

tially supplementing the income from other farm enterprises is worthy of consideration. The size to which this woodland might be increased would be limited by the following factors:

1. Area of woodland that can be purchased for a reasonable price.
2. Financial ability of the farmer to purchase such woodland.
3. Amount of family labor not now utilized for other farm enterprises and available for management of farm woodland.

There are approximately 200,000 acres of nonfarm land in the parish. A large part of this is woodland in corporate and other private ownership, and very probably a considerable part of this could be purchased if a reasonable price could be paid for it. The farmer, however, does not have cash with which to buy, and any recommendation of such a program is wishful and impractical unless the Government provides credit facilities. During a 12-months period a two-mule cotton farmer has 145 man-days of family labor unemployed in any farm enterprise. Of this total, 76 days occur during November, December, January, and February, and the time could very well be used for management of the farm woodland.

The right-hand columns of table 13 show estimates of the annual labor requirements for cutting and managing a farm woodland of 200 acres with a stand similar to that found on the best 10 percent of the farm woodlands. About 64 man-days are required annually to cut the forest products. In addition, it is estimated, 3 days will be required for fire protection, including the building of fire lines; 2 days will be required to mark the timber to be cut; and 3 days will be required for supervising the sales and scaling the products before they are removed by the purchaser. This makes a total of about 72 man-days, which is well within the amount of time available for enterprises other than those now pursued on the farm. In most cases, however, the woodlands purchased would be similar to those on the usual farm and, with much smaller cuts, the time required for harvesting would be much less until the stand could be built up.

Table 13 also gives the volume and value of the recommended annual cuts of sawlogs, pulpwood, ties, fence posts, and fuel wood during the next 5 years, for 200 acres of the best 10 percent of the farm woodlands. Both stumpage and the value of labor in cutting these products are included, but the value that would be added by hauling these products to market has not been included because the farmer probably would not have the use of a truck or wagon suitable for this purpose. Table 13 shows a total annual cash income of $329.30 from sale of sawlogs, pulpwood, and ties, and an additional value of $45 for fence posts and fuel wood used annually on the farm. This is more than the farmer now receives from crop and livestock production. Such an income would greatly improve the financial position of the farmer, since it involves no additional expense for labor and equipment not now available for other farm operations. The only additional cost beyond those of the present farm woodland would be taxes on the approximately 70 acres which are in excess of the 160-acre homestead now exempt from taxes under Louisiana statutes, and interest on the investment in the woodland. Taxes would probably run between 10 and 20 cents per acre, and timberland would probably have a value of $10 to $20 per acre, depending on the location and the volume and quality of timber.

Table 13.—Volume and value of recommended annual cuts and annual labor requirements in cutting and managing loblolly pine and hardwoods on 200 acres of best 10 percent of farm woodlands

Product	Volume and unit	Value			Labor requirements	
		Stumpage	Labor	Total	Per unit	Total
		--- Dollars ---			Man-days	
Forest products sold for cash:						
Sawlogs 1/						
Pine	36.2 M bd.ft.	217.20	36.20	253.40	0.500	18.1
Hardwoods	2.6 M bd.ft.	13.00	2.60	15.60	.500	1.3
Pulpwood 2/						
Pine	16.2 units	8.10	16.20	24.30	.667	10.8
Ties 3/						
Hardwoods	120 ties	18.00	18.00	36.00	.100	12.0
Total		256.30	73.00	329.30		42.2
Forest products used on the farm:						
Fence posts 4/						
Hardwoods	100 posts	2.00	3.00	5.00	0.020	2.0
Fuel wood 5/						
Pine	4 cords	2.00	6.00	8.00	1.000	4.0
Hardwoods	16 cords	8.00	24.00	32.00	1.000	16.0
Total		12.00	33.00	45.00		22.0
Total cutting forest products						64.2
Building fire lines						3.0
Marking timber to be cut						2.0
Supervising sales, scaling						3.0
Total cutting and managing						72.2

1/ Stumpage: Pine $6 per M board feet, hardwoods $5 per M board feet, Doyle rule; $1 value per M board feet added for felling and bucking into logs.

2/ Stumpage $0.50 per unit (4' x 5' x 8'); $1 value per unit added for cutting and stacking pulpwood.

3/ Stumpage $0.15 per tie; $0.15 value per tie added for tie hacking.

4/ Stumpage $0.02 per post; $0.03 value per post added for cutting and hauling to field.

5/ Stumpage $0.50 per cord; $1.50 per cord added for cutting and hauling to house.

Providing woodlands of this size for all the two-mule cotton farms would require the addition of approximately 73,000 acres of woodland. If the stands on this area were built up to the stocking now found on the best 10 percent of the farms, a net cash return of approximately $137,000 annually could be realized. A program of enlarged and more productive farm woodlands would greatly improve the general economy of the parish by (1) furnishing employment to supplement that offered by farm crop production, (2) assuring a local and cheap source of building material, and (3) creating "exchange" to pay for goods from outside the community through cash sales of forest products.

In conclusion: Probably the outstanding fact brought out in this study of the place of farm woodlands in the general farm economy is the need for larger and better-stocked woodlands. Growth of timber is rapid and market outlets and prices are satisfactory in the parish, but 15- or 25-acre woodlands cannot contribute enough income to relieve the major part of the present deficiency in farm income. This might be accomplished, however, if the area of the usual farm woodland could be increased by four to eight times. Although the Farm Credit Administration can now finance sound additions to farm areas, it is not likely that many bankable cases could be found until farm forestry is more generally understood and practiced. Another possibility is the leasing or renting of private lands by corporate or smaller owners to farmers who would manage and cut the timber on a sharecropping basis. Public ownership or leasing of forest land with some arrangement for its management on a part-time basis by farmers of the area would be still another possibility. Although farm forestry can make a distinct contribution to the problem of farm adjustment in this area, its full possibilities will not be realized until the problems of increasing farm woods acreages and effectuating good management of stands are solved.